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Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Joachim Arlt, et al.
Serial No: 10/026,917
Filed: December 21, 2001
For: METHOD FOR MANUFACTURING WAFERS
Examiner: Thomas M. Dougherty
Art Unit: 2834

Mail Stop: Appeal Brief-Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

S I R:

This appeal is taken from the Final Action mailed August 29,
2005.

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Real Party in Interest

The real party in interest in the above-identified application is:

VenTec Gesellschaft für Venturekapital und
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Related Appeals and Interferences

There are no related appeals or interferences of which Applicants are aware regarding the above-identified application.

Status of Claims

Claims 1-16 are pending in the application. Claims 5, 10, 13 and 16 would be allowable if rewritten in independent form. Claims 1, 6, 7, 9, 11 and 15 stand rejected under 35 U.S.C. 102(e) over the patent to Hwang et al. Claim 2 stands rejected under 35 U.S.C.

103(a) over Hwang et al. in view of the patent to O'Mara et al. Claim 3 stands rejected under 35 U.S.C. 103(a) over Hwang et al. in view of the patent to Wytman et al. Claims 4 and 12 stand rejected under 35 U.S.C. 103(a) over Hwang et al. in view of the patent to Morita et al. Claims 8 and 14 stand rejected under 35 U.S.C. 103(a) over Hwang et al. in view of the patent to Brown. Claims 1-4, 6-9, 11, 12, 14 and 15 are subject to the present appeal.

Status of Amendments After Final Rejection

No amendment after final rejection was made.

Summary of the Claimed Subject Matter

The claimed invention recites a method of manipulating semiconductor substrates in which a semiconductor substrate is placed on a transportable electrostatic chuck (see page 5, lines 5-7 of the specification). The semiconductor substrate is kept clamped on the electrostatic chuck for the duration of and between at least two processing steps (see page 5, lines 7-9) of the semiconductor substrate without any additional external power

supply to recharge the transportable electrostatic chuck during long or several process steps or operation steps (page 12, lines 12-15).

The claimed invention further recites an electrostatic carrier system for manipulating semiconductor substrates. The system comprises at least one transportable electrostatic chuck for a semiconductor substrate (see page 5, lines 5-7) and at least one transfer station for transferring the transportable electrostatic chuck with the semiconductor substrate placed thereon between processing steps (see page 5, lines 7-9). The electrostatic chuck is configured so as to clamp the substrate without any additional external power supply to recharge the transportable electrostatic chuck during long or several process or operation steps (page 12, lines 12-15).

Grounds of Rejection to be Reviewed on Appeal

The following grounds are presented for review:

Whether claims 1, 6, 7, 9, 11 and 15 are anticipated under 35 U.S.C. 102(e) by U.S. Patent No. 6,238,160 to Hwang et al.

Argument**The Rejection of Claims 1, 6, 7, 9, 11 and 15 under 35 U.S.C.****102(e) :**

In rejecting claims 11, 6, 7, 9, 11 and 15, the Examiner stated the following when rejecting the claims as being anticipated by Hwang et al.:

"Hwang et al. show (e.g. fig. 2) a method of manipulating semiconductor substrates comprising placing a semiconductor substrate (26) on a transportable electrostatic carrier (38), and keeping the semiconductor substrate (26) placed on the electrostatic carrier (38) for the duration of and between at least two processing steps (backside cooling and any of CVD, sputtering, etching, etc., see col. 5, ll. 39-61) of the semiconductor substrate (26) without any additional external power supply to recharge the transportable electrostatic chuck during long or several process steps or operation steps. Note at col. 5, lines 25-41 that two processing steps are carried out,

those being relatively moving the arm and wafer and then rapidly moving the arm into the process chamber under a single power application.

The method comprises electrically charging and/or discharging the transportable electrostatic carrier separately in one or more mobile or stationary transfer stations. Note that any such carrier will have to be charged while it is still or moving, there are simply no other alternatives.

The method further comprising recharging or discharging the electrostatic carrier in a charging station of a processing machine. See the discussion particularly at col. 2, ll. 25-42 in which it is noted that a second electrostatic force is removed after processing in a chamber than the wafer is moved, i.e. transported.

The transportable electrostatic carrier is used in a unipolar (fig. 2) or bipolar (fig. 5) electrostatic system. See also col. 1, ll. 49-53.

Hwang et al. show (fig. 2) an electrostatic carrier system for manipulating semiconductor substrates, the system comprising at least one transportable electrostatic carrier (38) for a semiconductor substrate (26) and at least one transfer station for transferring the transportable electrostatic carrier (38) with the semiconductor substrate (26) placed thereon between processing steps. See col. 2, ll. 24-42."

Hwang et al., it can be seen that this patent discloses a method for transporting and electrostatically chucking a semiconductor wafer. Hwang et al. disclose a permanent voltage supply, whereas in the presently claimed invention there is no additional external power supply. In Hwang et al., the wafer is connected directly with a pole of the voltage source (see Figs. 2 and 3, in particular the arrow pointing upward in the component

34). The remaining figures also all show a voltage source. Thus, due to the permanent connection to the voltage source it is not possible for Hwang et al. to disclose a transportable electrostatic chuck, as in the presently claimed invention.

Conclusion

Accordingly, in view of the above considerations, it is Applicant's position that the Examiner's rejections of claims 1, 6, 7, 9, 11 and 15 under 35 U.S.C. 102(e) and claims 2-4, 8, 12 and 14 under 35 U.S.C. 103(a) are in error and should be reversed.

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The amount of \$250.00 to cover the small-entity fee for filing an appeal brief is being charged as per attached form PTO-2038. Any additional fees or charges required at this time in connection with this application should be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

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Dated: February 21, 2006

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450 Alexandria, VA 22313-1450, on February 21, 2006.

By: 
Klaus P. Stoffel

Date: February 21, 2006

Appendix

1. A method of manipulating semiconductor substrates comprising placing a semiconductor substrate on a transportable electrostatic chuck, and keeping the semiconductor substrate clamped on the electrostatic chuck for the duration of and between at least two processing steps of the semiconductor substrate without any additional external power supply to recharge the transportable electrostatic chuck during long or several process steps or operation steps.

2. The method according to claim 1, wherein the transportable electrostatic chuck has a thickness of 0.3 - 2.5 mm, comprising using the electrostatic chuck and the wafer placed thereon in unmodified or little-modified machines for processing semiconductor substrates.

3. The method according to claim 1, wherein the transportable electrostatic chuck is a component of an electrostatic chuck system, further comprising inductively charging and discharging without contact the electrostatic chuck system.

4. The method according to claim 1, wherein the transportable electrostatic chuck includes an integrated electrical charging and/or discharging device, comprising supplying the charging and/or discharging device by a battery or an accumulator.

5. The method according to claim 4, comprising controlling the transportable electrostatic chuck for electrostatically charging and/or electrostatically discharging by remote control.

6. The method according to claim 1, comprising electrically charging and/or discharging the transportable electrostatic chuck separately in one or more mobile or stationary transfer stations.

7. The method according to claim 6, comprising recharging or discharging the electrostatic chuck in a charging station of a processing machine.

8. The method according to claim 1, comprising monitoring and/or controlling the steps of securing and/or separating the wafer from the electrostatic chuck by means of position sensors.

9. The method according to claim 1, wherein the transportable electrostatic chuck is used in a unipolar or bipolar electrostatic system.

10. The method according to claim 1, comprising labeling the electrostatic chuck with an electronic label for facilitating sorting and following a production sequence of individual semiconductor substrates.

11. An electrostatic carrier system for manipulating semiconductor substrates, the system comprising at least one transportable electrostatic chuck for a semiconductor substrate and at least one transfer station for transferring the transportable electrostatic chuck with the semiconductor substrate placed thereon between processing steps, the electrostatic chuck being configured so as to clamp the substrate without any additional external power supply to recharge the transportable electrostatic chuck during long or several process or operation steps.

12. The system according to claim 11, comprising an integrated electrically charging and/or discharging device for the transportable electrostatic chuck, and a battery or an

accumulator for supplying the electrical charging and/or discharging device.

13. The system according to claim 12, comprising a remote control for the charging and/or discharging device.

14. The system according to claim 11, comprising position sensors for monitoring and/or controlling the position of the semiconductor substrate.

15. The system according to claim 11, wherein the system is a unipolar or bipolar electrostatic system.

16. The system according to claim 11, wherein the electrostatic chuck has an electronic label.

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Evidence Appendix

N.A.

Related Proceedings Appendix

There are no related proceedings.